

Globalization, Convergence, and History

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Globalization, Convergence, and History

JEFFREY G. WILLIAMSON

There were three epochs of growth experience after the mid-nineteenth century for what is now called the OECD “club”: the late nineteenth century, the middle years between 1914 and 1950, and the late twentieth century. The first and last epochs were ones of overall fast growth, globalization, and convergence. The middle years were ones of overall slow growth, deglobalization, and divergence. Thus history offers an unambiguous positive correlation between globalization and convergence. When the pre–World War I years are examined in detail, the correlation turns out to be causal: globalization played *the* critical role in contributing to convergence.

THEORY NEEDS HISTORY

Two important features of the late twentieth-century international economy characterized the late nineteenth century as well. First, the earlier period was one of rapid globalization: capital and labor flowed across national frontiers in unprecedented quantities, and commodity trade boomed as transport costs declined sharply. Second, the late nineteenth century underwent an impressive convergence in living standards, at least within most of what we would now call the OECD club. Poor countries at the periphery of the European club tended to grow faster than the rich industrial leaders at the center of the Old World and often even faster than the richer countries overseas in the New World. This club excluded, of course, most of the Third World and eastern Europe, and even around this limited periphery there were some who failed to catch up. But whereas Spain and Portugal lagged behind the leaders, others—like Ireland, Italy, and the Scandinavian countries—underwent a spectacular catch-up from the Great Famine to the Great War. To what extent were globalization and convergence connected?

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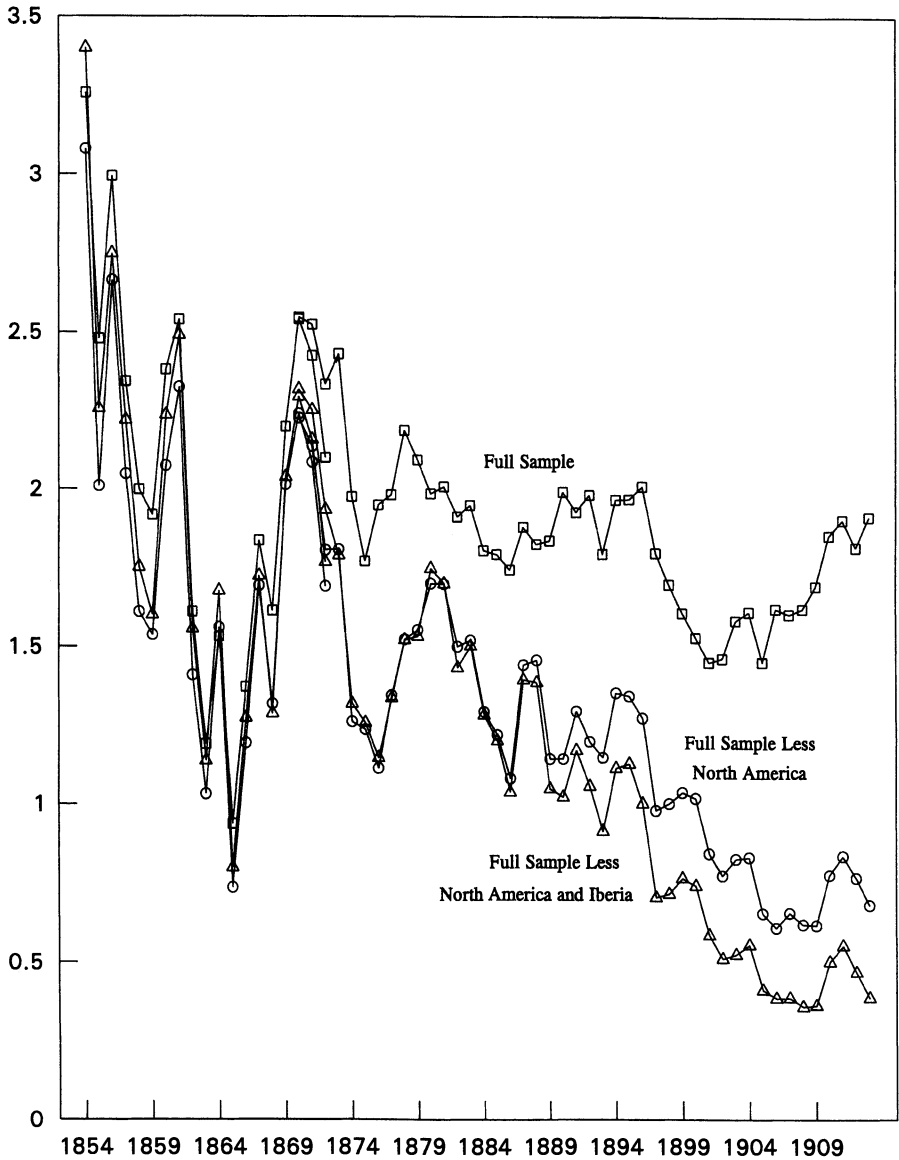


FIGURE 1

REAL WAGE DISPERSION 1854–1913

Source: Williamson, "Evolution," table A2.1 (revised 1996).

I will argue that most of the convergence between 1850 and 1914 was due to the open economy forces of trade and mass migration. I will by inference also suggest that convergence stopped between 1914 and 1950 because of deglobalization and implosion into autarchy.

I start with the convergence evidence and then offer the open economy explanations for it.

CONVERGENCE IN THE PAST

What does history have to say about convergence? To answer that question, we have to agree on the meaning of convergence. The critical bottom line for me is whether the living standard gap between rich and poor countries falls over time. Convergence implies an erosion in this gap, at least in percentage terms. New growth theorists call this sigma-convergence. To get sigma-convergence, poor countries must grow faster than rich, an event new growth theorists call beta-convergence. Second, what history? My interest has always been in what Simon Kuznets called modern economic growth, and that translates here into the century and a half since about 1850. Third, convergence of what? There appear to be two data sets that can be used for such analysis. Angus Maddison's GDP per worker-hour estimates offer one (originally published in 1982, now superseded by his 1991 book and by even more recent revisions).¹ My real wages of the urban unskilled offer another.² Fourth, convergence among whom? As the introduction suggests, my net will only capture members of the present OECD club with European origin (plus Argentina and Brazil).³ All of us know that much of the convergence since 1870 disappears when the net is widened to include Eastern Europe, and if it were widened still further to include the Third World, convergence would totally evaporate.⁴ Why the small net? Because I think the sources of convergence in the OECD club are themselves misunderstood, and it matters to get the facts right.

Figure 1 and Table 1 document real wage convergence from midcentury to the Great War. Although the convergence was not as fast as that of the late twentieth century, it *was* pronounced, and about as fast as average convergence over the full 150 years since 1850. Figure 2 and Table 2 show that the late nineteenth-century real wage convergence was replicated by gross domestic product (GDP) per worker-hour. However, real wage convergence was a lot faster than GDP per worker-hour, and the globalization arguments that follow offer some reasons why. Table 3 reports the λ 's that emerge when so-called unconditional convergence equations are applied to this historical epoch. They imply a peak rate of real wage convergence between 1870 and 1890 of 1.2 percent per annum, and about 1 percent per annum over the 1870 to 1913 period as a whole.

Although impressive, the late nineteenth-century rate of convergence

¹ Maddison, *Phases, Dynamic Forces*, and "Explaining the Economic Performance."

² These wages are purchasing-power-parity adjusted; see Williamson, "Evolution."

³ The full real wage 17-country sample is Australia, Argentina, Belgium, Brazil, Canada, Denmark, France, Germany, Great Britain, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, and the United States. The full (1991) GDP per worker-hour 15-country sample subtracts Argentina, Brazil, Ireland, Portugal, and Spain, but adds Austria, Finland, and Switzerland. Thus, Maddison's sample has *no* Latin observations, either Old World or New, and does not treat separately one of the best examples of catching-up, Ireland. His 1994 sample repairs this damage. See his "Explaining the Economic Performance."

⁴ DeLong, "Productivity Growth."

TABLE 1
COEFFICIENTS OF VARIATION OF REAL WAGES, 1854–1939

	Full Sample			Full Sample Less North America			Full Sample Less North America and Iberia	
	C(13)	C(17)	C(16)	C(12)	C(15)	C(14)	C(10)	C(13)
1854	0.326			0.308			0.340	
1870	0.254	0.255		0.224	0.223		0.229	0.232
1890		0.199			0.114			0.102
1913		0.191			0.068			0.039
1914			0.103			0.085		0.068
1926			0.148			0.146		0.138
1927		0.188	0.147		0.186	0.142		0.131
1939		0.285			0.200			0.138

Notes: The “full sample” includes the following 13 countries until 1870: Australia, the United States, Belgium, France, Germany, Great Britain, Ireland, Netherlands, Norway, Spain, Sweden, Brazil, and Portugal. In 1870 the following four countries are added to the sample: Argentina, Canada, Denmark, and Italy. Portugal drops from the sample from 1914 to 1926 and then rejoins. The “full sample less North America” excludes Canada and the United States, implying that we start with 12 countries and then increase to 15 in 1870. Again, Portugal drops from the sample between 1914 and 1926. The “full sample less North America and Iberia” excludes the United States, Canada, Spain, and Portugal, implying that we start with 10 countries and expand to 13 in 1870.

Source: Williamson, “Evolution,” with Great Britain revised.

TABLE 2
COEFFICIENTS OF VARIATION OF GDP PER WORKER-HOUR, 1870–1938

	Full Sample	Full Sample Less North America
	C(15)	C(13)
1870	0.153	0.169
1890	0.118	0.122
1913	0.107	0.088
1929	0.110	0.080
1938	0.090	0.054

Notes: The “full sample” includes Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Italy, the Netherlands, Norway, Sweden, Switzerland, the United Kingdom, and the United States. It does not include Japan. The “full sample less North America” drops Canada and the United States from the sample.

Source: Maddison, *Dynamic Forces*.

TABLE 3
THE ESTIMATED RATE OF CONVERGENCE (λ) 1854–1939

Epoch	Real Wages			GDP per Worker Hour	
	Full Sample	Less North America	Less Iberia and North America	Full Sample	Less North America
1854–1870	+0.005	+0.006	+0.004	—	—
1870–1890	+0.012	+0.020	+0.021	+0.004	+0.005
1890–1913	+0.008	+0.017	+0.033	+0.007	+0.011
1914–1926	–0.011	–0.016	–0.030	—	—
1927–1939	–0.003	+0.002	–0.001	—	—
1913–1929	—	—	—	+0.002	+0.005
1929–1938	—	—	—	+0.019	+0.024

Notes: The rate of convergence is $\lambda = 1/t \ln(\beta + 1)$, where β is the coefficient in convergence equation on log of initial real wages or GDP per worker-hour, and t is the time span.

Source: Data underlying Tables 1 and 2.

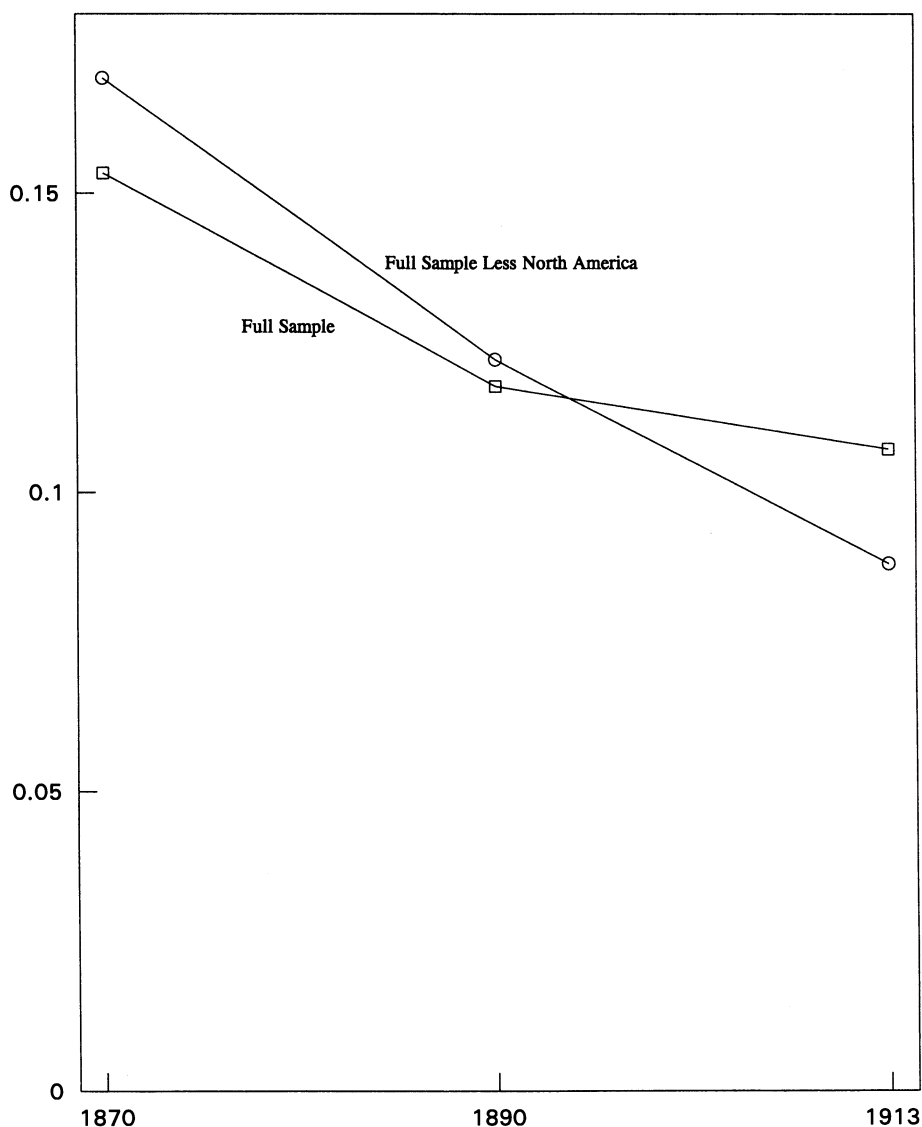


FIGURE 2

GDP PER WORKER-HOUR DISPERSION, 1870–1913

Source: Table 2.

implies that real wage gaps would still have persisted well into the present century even had the convergence not been interrupted: for example, wage gaps in 1940 would still have been half of the big 1870 gaps. Large initial gaps take a long time to erase, even when convergence is persistent. But it was *not* persistent: an anticonvergence regime intervened, which stopped convergence between 1914 and 1950. Figure 3 documents the interruption. The Great War produced real wage divergence, both the 1920s and the 1930s produced stability in real wage dispersion, and World War II

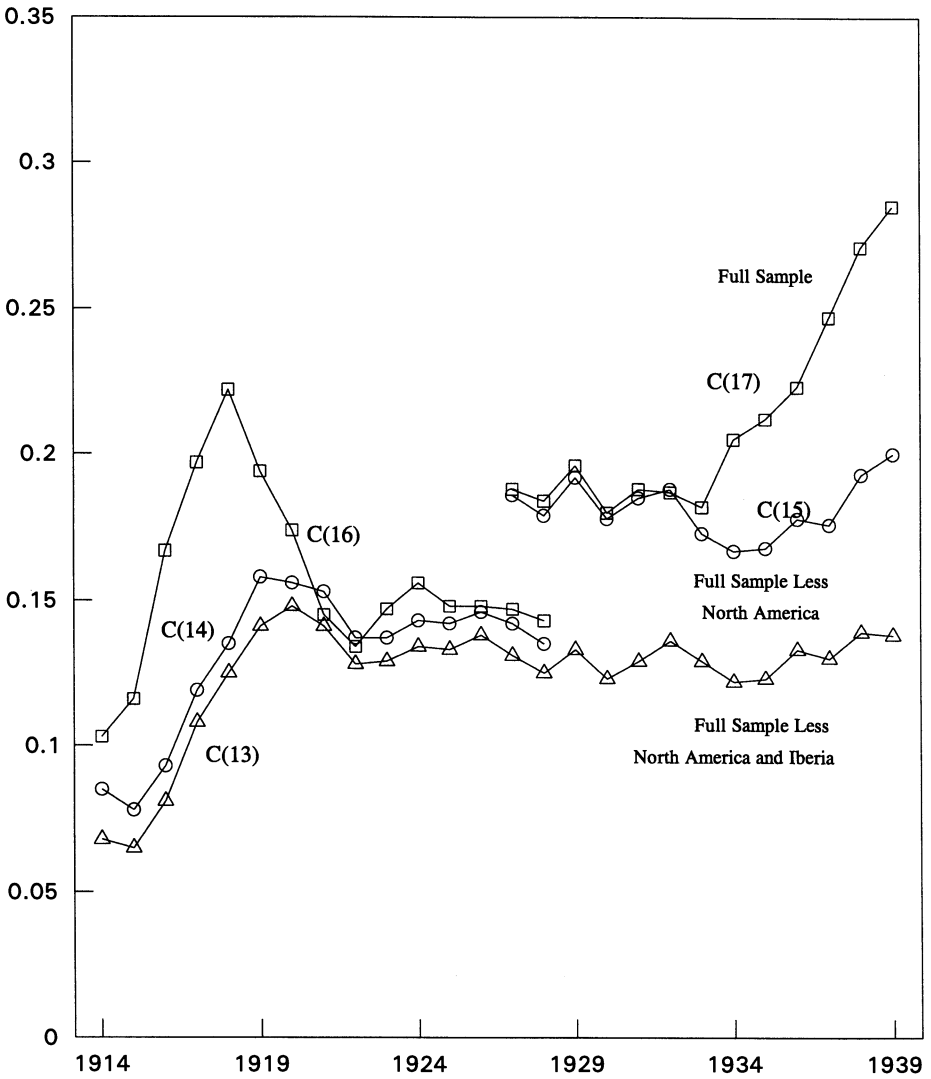


FIGURE 3
REAL WAGE DISPERSION 1914-1939

Notes: C(14) and C(16) exclude Portugal, which enters in 1927, giving rise to C(15) and C(17).
Source: Williamson, "Evolution," table A2.2.

produced more divergence. Figure 4 tells a similar, but less dramatic tale: GDP per worker-hour convergence slowed down sharply between 1913 and 1938. Once again, real wage dispersion exhibits more dramatic behavior than GDP per worker-hour, and the rest of this article will offer some explanations for the difference.

There are instructive country performances hidden by these summary statistics, especially the big North American outliers, Canada and the United States, both of which bucked the convergence tide. As Gavin

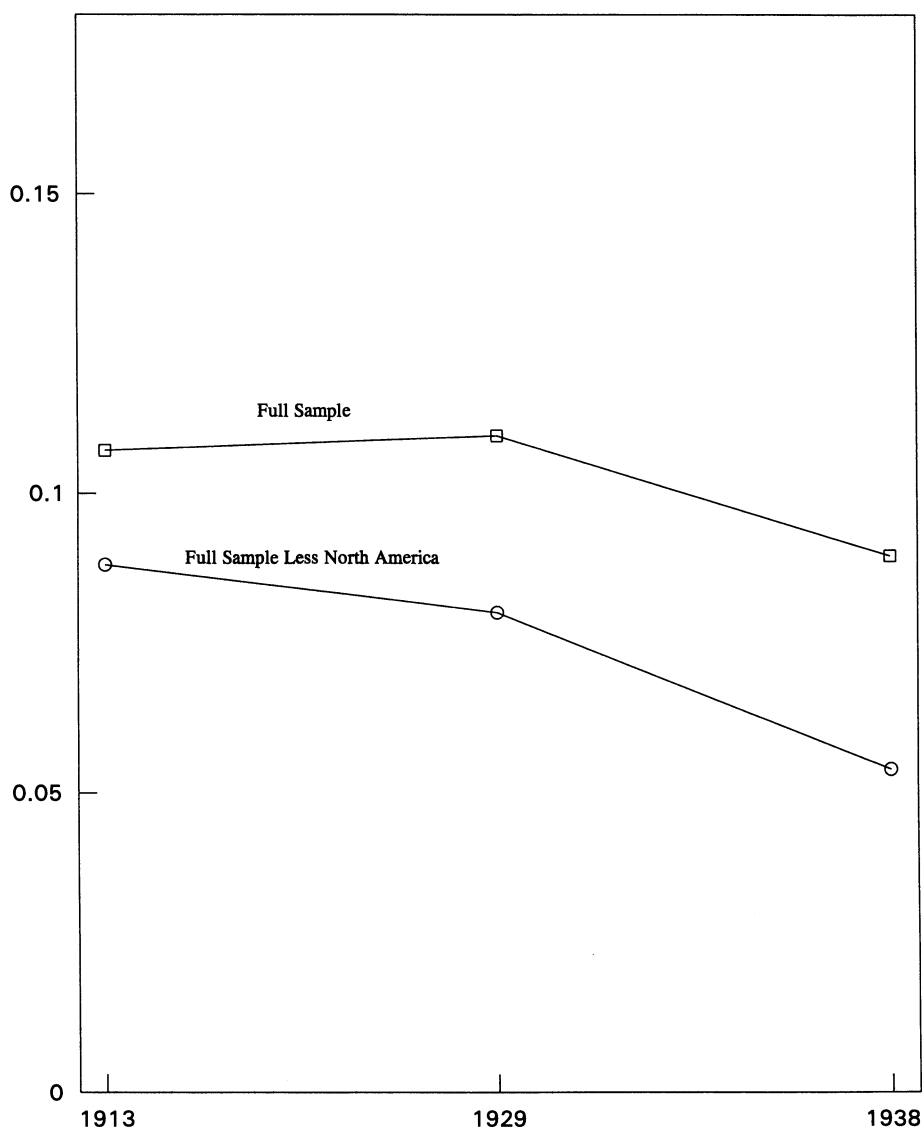


FIGURE 4

GDP PER WORKER-HOUR DISPERSION, 1913–1938

Source: Table 2.

Wright, Moses Abramovitz, and Paul David have argued, North America enjoyed a spectacular leap into industrial superiority after the early 1890s.⁵ The great leap forward is manifested by the rich North American New World improving its advantage over the poorer industrial Old World after 1890: real wages in the United States were 72 percent higher than in Britain in 1870. That wage advantage had diminished to 63 percent by

⁵ Abramovitz and David, “Convergence”; and Wright, “Origins.”

1890, supporting convergence; but by 1913 the United States regained everything it had lost. Canada offers an even better example of North American resistance to convergence. Canada improved its real wage superiority from 48 percent above Britain in 1870 to 57 percent in 1900 and, riding the prairie wheat boom, to 123 percent in 1913.

This deviant North American behavior tended to retard the rate of convergence in the late nineteenth century, and Figures 1 and 2 show just how much. The “full sample less North America” converges faster than the full sample itself. Indeed, although the former traces out an abrupt switch from real wage convergence to divergence around the turn of the century, the latter continues the post-1850 convergence at about the same rate (Figure 1). The GDP per worker-hour evidence suggests the same (Figure 2).

Some might argue that this deviant behavior would be even more pronounced if the industrial North were treated separately. Maybe yes, maybe no. After all, regional inequality was not simply an American problem, for it applied with equal drama to European countries like Italy. Although I will stick to national definitions in what follows, I am aware of regional experience with convergence and divergence, and of an older literature that distinguished between regional “backwash,” “polarization,” and “spread” effects.⁶ There is reason to believe that the globalization and convergence forces that operated at the national level also operated at the regional level, but I do not have the space here to pursue the issue in depth.⁷

What about Europe? Given the great debate about Britain’s loss of industrial leadership to her close competitors, most of us would look for evidence of, say, German catch-up on the leader. We would be looking in the wrong place. What matters far more to European convergence is the performance of poor countries around the European periphery. Over the thirty years following 1870, four of these poor countries dramatically improved their real wages relative to Britain: Denmark rose from 54 to 85 percent; Ireland, from 73 to 89 percent; Sweden, from 42 to 82 percent; and Norway, from 42 to 65 percent. Italy also made gains, but they were more modest and were centered in the North. The Iberians lost ground: Portugal fell from 48 to 42 percent of Britain, and Spain, from 76 to 48 percent.

If convergence was relatively slow in Europe in the late nineteenth century, it was the rise in the historically persistent wage gap between the Latin south and the non-Latin north that accounts for it—and this in spite of so much attention to an alleged late Victorian and Edwardian failure in England. Late Victorian and Edwardian failure helps explain continued convergence in the north of Europe, but what dominated European

⁶ Williamson, “Regional Inequality”; Hirschman, *Strategy*; and Myrdal, *Economic Theory*.

⁷ See Barro and Sala-i-Martin, “Convergence,” for a modern look by two macroeconomists.

experience was not Britain's failure (which hastened convergence), but the failure of the Latin economies (which retarded convergence). Figure 1 shows this clearly: real wage convergence in the OECD club is considerably greater when the two Iberian countries are removed from the sample.

Three countries illustrate the convergence best: Ireland, Sweden, and the United States. In 1854, real wages in Sweden were only 48 percent of those of Britain, whereas in 1913 they were at par, an impressive catch-up by any standard. In 1854, and shortly after the Famine, real wages in Ireland were only 60 percent of those of Britain, a figure that had hardly changed at all over the previous three decades. Real wages in Ireland started a dramatic convergence on those across the Irish Sea during the 1850s (and notably, in the absence of any Irish industrialization), so that they were 73 percent of Britain's by 1870. By 1913 they were 92 percent of Britain's. Ireland was transformed over this period of convergence from a poverty-stricken, peasant economy that had served as a source of elastic labor supply for Britain's booming cities to an economy at the start of the twentieth century that boasted urban wages close to those prevailing in English cities. Irish and Swedish wages even converged on those of the New World between 1854 and 1913: as a percentage of U.S. wages, Irish wages rose from 38 to 53 and Swedish wages rose from 24 to 53.⁸

Now, why do I think globalization accounts for most of this convergence?

GLOBALIZATION IN COMMODITY MARKETS: THE FACTOR PRICE CONVERGENCE THEOREM AT WORK

The factor price equalization theorem has been a durable tool for trade theorists ever since Eli Heckscher and Bertil Ohlin made their seminal contributions in 1919 and 1924, although it was convergence not equalization that held the interests of these two Swedes.⁹ The Heckscher-Ohlin paradigm argues that countries export commodities that use intensively the factors in which they are well endowed, whereas they import commodities that use intensively the factors in which they are poorly endowed. Let falling transport costs tend to equalize prices of the traded commodities, encouraging more trade. Countries will now export more of the goods that exploit their favorable factor endowment. The demand for the abundant and cheap factor booms, while that for the scarce and expensive factor falls. Thus, commodity price convergence tends to produce factor price convergence: for example, wages should rise in poor countries relative to

⁸ As it turns out, the average wage gap between New World and Old drives a large share of the convergence over the half century from 1854 to 1913 (Williamson, "Evolution").

⁹ Flam and Flanders, *Heckscher-Ohlin Trade Theory*. This section draws heavily on a recent collaboration with O'Rourke on late nineteenth-century Scandinavian catch-up ("Open Economy Forces" and "Education"), as well as earlier joint work on Anglo-America ("Were Heckscher and Ohlin Right?").

rich. It follows that trade can be a substitute for labor and capital mobility in generating wage or labor productivity convergence.

Heckscher and Ohlin were writing just after the spectacular late nineteenth-century Scandinavian catch-up, and they were motivated by the commodity price convergence that they thought had taken place in the Atlantic economy. Their economic metaphor was driven by primary foodstuffs: the New World grain invasion, carried by the sharp decline in transport costs, served to lower the relative price of grains in Europe and to raise it in North America. Liverpool was the major port handling Britain's grain trade, whereas Chicago was the city closest to America's grain producers, so it is the Liverpool-Chicago price gap that mattered most. Liverpool prices exceeded Chicago prices by about 60 percent in the three years centered on 1870, while they exceeded Chicago prices by less than 15 percent in the three years centered on 1912. The price convergence was also manifested by beef, pork, bacon, mutton, butter, bar iron, cotton textiles, coal, copper, hides, wool, tin, cotton, and many other tradables.¹⁰

Had there been no other force at work, the terms of trade between manufactures and foodstuffs would have changed dramatically in both countries. If Britain had absorbed all of the transport-induced price shock, its terms of trade would have almost doubled. If the United States had absorbed all of the transport-induced price shock, its terms of trade would have more than doubled. These were very big price shocks, exactly the kind that are supposed to set factor price convergence in motion, and a computable general equilibrium (CGE) model is precisely the tool to use to assess that alleged impact.

CGE models are certainly not new to economists, as they are common in development, trade, and public finance.¹¹ Nor are they new to economic history.¹² Indeed, I suppose I must take some responsibility for their use in economic history: I started applying them to historical problems in the early 1970s, after exploring their use on Third World development questions with Alan Kelley.¹³ They *are* perfect for this trade convergence problem, as Peter Passell and Wright, Clayne Pope, and John James suggested in the 1970s when assessing the antebellum debates on tariff and land policy, or even earlier in the 1960s when Peter Temin and Robert Fogel collided on the American labor scarcity debate.¹⁴ Kevin O'Rourke and I have used them in the 1990s to show that commodity price convergence had a significant impact on Anglo-American factor price

¹⁰ O'Rourke and Williamson, "Were Heckscher and Ohlin Right?" table 2, panel B.

¹¹ Shoven and Whalley, *Applying General Equilibrium*.

¹² James, "Use"; and Thomas, "General Equilibrium Models."

¹³ Kelley and Williamson, "Writing History," "Modelling," and *Lessons*; and Kelley, Williamson, and Cheetham, *Dualistic Economic Development*. My application of these models to historical problems was guided by the influence of Ron Jones, with whom I jointly ran a summer workshop in 1972 at the University of Wisconsin.

¹⁴ Passell and Wright, "Effects"; Pope, "Ante Bellum Tariff"; and James, "Welfare Effects." See Temin, "Labor Scarcity"; and Fogel, "Specification Problem."

convergence.¹⁵ Commodity price convergence explains more than a third of the decline in the Anglo-American real wage gap over the quarter century ending in 1895. Because of powerful offsetting forces, Anglo-American convergence stopped after the early 1890s, even though the factor price convergence effect of commodity trade persisted. Commodity price convergence played a significant role in fostering real wage convergence up to 1895—just as Heckscher and Ohlin predicted—and in muting the powerful divergence forces set in motion by a much-debated industrial “failure” in Britain and by industrial success in North America based on a large market size and a rich mineral resource base.¹⁶

What about Sweden, the classic European catch-up case that motivated Heckscher and Ohlin in the first place? How much of the impressive Anglo-Swedish and American-Swedish convergence can be explained by commodity price convergence, trade creation, and those Heckscher-Ohlin forces? To the extent that Sweden retreated behind tariff walls in the 1880s, perhaps the price convergence set in motion by the global collapse in international transport costs was muted or even offset. O’Rourke and I have recently shown that there was price convergence between Sweden and Britain over the late nineteenth century, as the former integrated into the global commodity market with the latter at its center.¹⁷

It turns out, however, that Anglo-Swedish price convergence was modest, suggesting that the Heckscher-Ohlin factor price convergence effects must also have been modest. Once again we use a CGE model to assess those effects, exactly the kind of model first proposed by Ohlin and now so commonly used in trade theory. The CGE model estimates that the price convergence with Britain served to raise urban wages in Sweden by only 2 percent above what would have been true in its absence, and thus it explains only 4 percent of the impressive erosion in the Anglo-Swedish wage gap. Adding the large Anglo-American Heckscher-Ohlin effect to the small Anglo-Swedish effect yields an American-Swedish figure of perhaps a tenth.

So far, Heckscher and Ohlin get mixed reviews: commodity price convergence accounts for about three-tenths of real wage convergence between the United States and Britain during the 25 years after 1870, and about a tenth of the convergence between the United States and Sweden over the four decades after 1870. However, Anglo-American commodity price convergence effects were swamped by other forces after 1895, and they made only a modest contribution to Anglo-Swedish real wage convergence over the four decades as a whole. O’Rourke, Alan Taylor, and I turned to econometric analysis of wage-rental trends in seven countries (including Britain and Sweden) to search for the modal case. The study

¹⁵ O’Rourke and Williamson, “Were Heckscher and Ohlin Right?”

¹⁶ Chandler, “Visible Hand”; Wright, “Origins”; and Abramovitz and David, “Convergence.”

¹⁷ O’Rourke and Williamson, “Open Economy Forces.”

found that commodity price convergence could explain about a quarter of wage-rental convergence between the New World and the Old World.¹⁸

Trade was a substitute for factor flows in the late nineteenth century, but it was hardly a perfect substitute. Imperfect substitute or not, there are three corollaries suggested by this historical theorem. First, countries that raised high barriers to trade were less likely to be part of the convergence (like Spain and Portugal). Second, deglobalization and the move to autarchy between 1914 and 1950 must have contributed to the observed cessation in convergence. Third, the gradual reconstruction of world commodity markets since 1950 must have contributed to the resumption of convergence.

So say the lessons of history regarding globalization in commodity markets. What about factor markets, and mass migrations in particular?

GLOBALIZATION IN LABOR MARKETS: MASS MIGRATION AND CONVERGENCE

In its 1911 *Report*, the U.S. Immigration Commission concluded that mass immigration injured American labor—unskilled immigrants displaced both natives and older immigrant cohorts and undercut their living standards.¹⁹ The literature that followed largely discredited the *Report* for its racial overtones, its selective collection of data, and its sloppy analysis; but the Commission's big question lingers on: did immigrants crowd out residents and lower their living standards? If the answer to this first question is yes, then did U.S. immigration by itself contribute substantially to global convergence? If the answer to this second question is also yes, then what contribution did mass migration make to raising living standards in the poorer parts of Europe relative to the richer parts of Europe and to the richer New World?

True, analysts then and now have focused their attention on the Commission's views on assimilation. Yet the real obsession of that time was instead the macroimpact of the immigrants on American employment conditions, living standards, and wages. According to the Commission, real wages would have increased much more had immigrant labor supplies from southern and eastern Europe been absent.²⁰ Issac Hourwich rejected this kind of counterfactual thinking, preferring instead to emphasize that substantial gains in real wages had in fact taken place after the 1880s, thus concluding that immigration could not have retarded wage growth.²¹ More careful authorities, however, concluded just the opposite: Paul Douglas and Stanley Lebergott compared real wage growth in the period from the

¹⁸ O'Rourke, Taylor, and Williamson, "Factor Price Convergence," table 4.

¹⁹ The first half of this section, dealing with the United States, draws heavily on a book collaboration with Hatton, *Understanding Mass Migration*, chap. 8, and a joint paper, "Impact."

²⁰ U.S. Immigration Commission, *Reports*, vol. 8, p. 440.

²¹ Hourwich, *Immigration*, p. 163.

1890s to 1914 with that in the 1920s, concluding that mass immigration slowed real wage growth in the prequota period.²² Apart from studies like these, historians had, until only very recently, ignored the question of macroimpact.

Meanwhile, contemporary economists have generated a sizeable literature dealing with the impact of late twentieth-century immigration, and most of them have found the effects to have been tiny.²³ These studies tend to look across local labor markets for their evidence. As such, they almost certainly understate (or miss entirely) the economy-wide impact of immigration on wages. After all, foreign in-migration will only lower wages in a local labor market if it increases the total labor supply. If instead there is completely offsetting native out-migration, then a rise in the immigrant share is consistent with no change in the size of the local labor force and no immigrant-induced wage effect compared with other local labor markets in which natives relocate. But wages should fall (perhaps equally, perhaps not) in all locations. These macroeffects are not measured by the local labor market studies.

Perhaps a better way to isolate the impact of immigration is to estimate the wage adjustment mechanism from time series. Timothy Hatton and I recently did so on annual U.S. observations for 1890 to 1913. The econometric results were excellent, and their implication was that the 1913 real wage would have been 5 or 6 percent higher in the absence of net immigration.²⁴

Local labor market and time series estimates may both fail to capture the full impact of immigration on national wages. They make no allowance for output shifts between sectors, events with macro-factor-demand implications that are likely to have taken place in response to immigration. That is, they ignore the fact that international trade and domestic demand might have helped accommodate the immigrant influx by more job creation due to supply-side stimulus in labor-intensive sectors and to demand-side stimulus in investment in housing and social overhead. Nor do they allow capital to chase labor across the Atlantic, offsetting the decline in the capital-labor ratio that American immigration would otherwise have induced. These real-world complications are likely to have made it easier for America to absorb the immigrants without big living standard losses for natives. The best way to accommodate such complications is to evaluate the effects of international migration with a computable general equilibrium model.

CGEs have certainly been used before to analyze both contemporary

²² Douglas, *Real Wages*, p. 564; and Lebergott, *Manpower*, p. 163.

²³ Greenwood and McDowell, "Factor Market Consequences" and "National Labor Market Consequences"; Simon, *Economic Consequences*; and Borjas, *Friends or Strangers?* and "Economics of Immigration."

²⁴ Hatton and Williamson, "Impact," table 6, and *Understanding Mass Migration*, chap. 8.

and historical migration problems.²⁵ The first effort to apply a CGE to the late nineteenth-century United States estimated that immigration after 1870 lowered real wages in 1910 by 11 percent, during a period twice as long as the time series just cited that yielded 5 to 6 percent.²⁶ Cutting this old estimate of mine in half to make it comparable with the shorter time series period suggests something like 5 to 6 percent, almost identical to the time series estimate.

Another CGE experiment was implemented by Hatton, O'Rourke, and myself.²⁷ By deducting those estimated to have arrived before 1870 and by applying age/sex-specific participation rates to the remainder, the direct contribution of immigration to the labor force was derived for 1890 and 1910. The calculation also accommodated the labor force impact of the children of immigrants (based on the fertility of foreign-born females). Our calculations suggest that the U.S. labor force would have been 13 percent smaller in 1890 without the net immigration from 1870 to 1890, and about 27 percent smaller in 1910 without the net immigration from 1870 to 1910. Alternatively, immigration after 1870 served to augment the U.S. labor force by 15 percent in 1890 and 37 percent in 1910. Although these measured impacts are big, they would be a lot bigger if one believed that southern labor markets were completely segmented from the rest of the United States: immigration served to augment labor supplies in the North by more than in the country as a whole.²⁸ Because I ignore this possibility in what follows, I understate the impact of immigration on real wages in urban labor markets in the United States.

The impact of immigration is estimated under two alternative assumptions about international capital markets. The first treats the United States as completely closed to world capital markets and assumes that the domestic capital stock is unaffected by the more slowly growing labor force in the "no-immigration" counterfactual. Although a very bad assumption, it is commonly made even in debates about the impact of late twentieth-century immigration on American or European labor markets. The effects are very big under that dubious assumption. In the absence of immigration after 1870, the urban real wage would have been 14 percent higher in 1890 and 34 percent higher in 1910. If the Immigration Commission had any intuition about an impact of that size, it certainly would have had every cause to produce a 1911 *Report* that supported immigrant quotas!

But in this imaginary world of no foreign capital flows, rates of return to

²⁵ The list is long: Hamilton and Whalley, "Global Restrictions"; Williamson, *Late Nineteenth-Century American Development*, chap. 11, and *Coping*, chap. 6; Boyer, Hatton, and O'Rourke, "Emigration"; O'Rourke, Williamson, and Hatton, "Mass Migration"; and O'Rourke and Williamson, "Open Economy Forces," "Education," and "European Periphery."

²⁶ Williamson, *Late Nineteenth-Century American Development*, p. 387. My 11 percent 1974 estimate for 1870–1910 was also confirmed a little later by Lindert and myself in Williamson and Lindert, *American Inequality*, chap. 10.

²⁷ O'Rourke, Williamson, and Hatton, "Mass Migration."

²⁸ Wright, *Old South*.

capital must have been higher with more (immigrant) labor than with less. So, what happens when foreign capital from Britain and elsewhere in Europe is allowed to chase after the emigrants going to the United States? Suppose one assumes that the global capital market was perfectly integrated and that the United States faced an elastic supply of world capital.²⁹ Under these assumptions, less capital would have migrated across the Atlantic and in the no-immigration counterfactual, the marginal product of capital would have remained constant. Although the rise in the marginal product of labor would therefore have been attenuated, it would not have disappeared, because land-labor ratios would still have been higher under the capital mobility assumption. Bottom line? In a world without immigration after 1870, but with elastic world capital flow responses, the real wage in the United States would have risen additionally by almost 4 percent by 1890 and more than 9 percent by 1910.

Meanwhile, what was the impact of emigration on European labor markets? As with American immigration, European emigration generated no shortage of political debate. Some feared that the emigrations drained the home country of the best and the brightest. Post-Famine Irish commentators viewed the emigrant flood as evidence of Ireland's failure to industrialize and thus its inability to create enough good jobs.³⁰ Some saw the flood in even more negative terms, as one more *cause* of industrial failure, because they thought the best was being creamed off the top of the labor force. Some even argued that Ireland failed to industrialize because its home market for industrial goods was too small: once too small, scale economies were hard to achieve, Irish manufacturing lost its competitive edge, and industrial job creation faltered; emigrants fled the stagnant Irish labor market; and the market got even smaller. Such commentary would imply that a dismal path-dependent historical process was at work that ensured Irish industrial failure.³¹

On the other hand, Ireland *did* undergo an impressive catch-up on both Britain and the United States after the Famine.³² Economics as old as Adam Smith can explain why: emigration made labor more scarce in Ireland, thus raising real wages and living standards at home even compared with conditions overseas where immigration made labor more abundant. This kind of Smithian economics exploits diminishing returns: given land, capital, technology, and resources, more labor means lower real wages and living standards; less labor means higher real wages and

²⁹ Robert Zevin, "Are World Financial Markets?" and Murray Obstfeld, "International Capital Mobility," have both shown that world capital markets were at least as well integrated in the 1890s as in the 1980s, perhaps even better.

³⁰ Ó Gráda, *Ireland*, chap. 13. The remainder of this section draws on Hatton and Williamson, *Understanding Mass Migration*, chaps 9 and 10; Hatton's research with other collaborators on Ireland (Boyer, Hatton, and O'Rourke, "Emigration"); a paper on Sweden by O'Rourke and myself ("Open Economy Forces"); and a "global" paper by Alan Taylor and myself, "Convergence."

³¹ Ó Gráda, *Ireland*, pp. 342–47.

³² Williamson, "Economic Convergence."

living standards. Although the movers may have been able to escape to higher wages abroad, the now-scarcer stayers found conditions improving at home.

Swedish commentators also viewed emigration as a sign of failure: surely, they seemed to be saying, it is a poor economy that cannot generate enough good jobs to keep our young Swedes at home. The Swedes left in especially large numbers in the 1880s, and the debate became most intense right about that time. And this despite the fact that Sweden in particular, and Scandinavia in general, was in the midst of the most impressive European catch-up by far, and a catch-up that, in contrast with Ireland, seemed to be carried by vigorous industrialization.³³ Knut Wicksell wrote a popular essay in 1882 that argued the Smithian case: emigration would eventually solve the pauper problem that blighted labor-abundant and land-scarce Swedish agriculture and thus was a good thing to be tolerated, perhaps even stimulated.³⁴

What *was* the impact of mass emigration on the sending country? The literature is loud on assertion but quiet on evidence, even though more than a century has passed since Wicksell's essay on Sweden appeared and a century and a half since the post-Famine emigrant flood spilled out of Ireland. Using CGEs that allow for elastic world capital supplies, George Boyer, Hatton, and O'Rourke were able to show that post-Famine Irish emigration accounted for an enormous third to a half of the rise in real wages at home and for a third of income per head.³⁵ It follows that Irish emigration accounted for at least 60 percent of the convergence between Ireland and both Britain and the United States. Although we have yet to add up the impact of mass migration on *both* sending and receiving labor markets, Irish emigration by itself made a powerful contribution to Irish real wage and living standard convergence on Britain and the United States. The Swedish story is less spectacular but still impressive. O'Rourke and I have shown that Swedish emigration between 1870 and 1910 served to raise Swedish wages by about 12 percent above what they would have been in its absence.³⁶

European emigration had a significant impact on labor markets at home: the departure of the movers improved economic conditions of the stayers faster than would have been true without emigration—raising real wages, lowering unemployment, and eroding poverty at a greater rate. By glutting labor markets abroad, the mass migrations also reduced the pace of real wage growth in receiving countries. Thus, mass migration tended to create economic convergence among the participating countries—living standards in the poor emigrating countries tended to catch up with living standards in rich immigrating countries. Not all countries participated,

³³ O'Rourke and Williamson, "Education" and "European Periphery."

³⁴ Cited in Karlstrom, *Economic Growth*, p. 155.

³⁵ Boyer, Hatton, and O'Rourke, "Emigration."

³⁶ O'Rourke and Williamson, "Open Economy Forces."

some had offsetting influences, and some had more induced catch-up than others, but the underlying tendencies must have been pervasive.

Exactly how pervasive? To answer this question, Taylor and I asked another: what would have been the measured convergence 1870 to 1910 had there been no mass migration? The no-migration counterfactual invokes the *ceteris paribus* assumption: in each country, we adjust population and labor force according to the average net migration (and labor participation) rate observed during the period and assume that technology, capital stocks, prices, and all else remain constant. This time the analysis is implemented by the econometric estimation of labor demand in sending and receiving countries.³⁷ Using the estimated labor demand functions, what was the impact of mass migration on convergence? Once again, the answer depends on what one assumes about world capital markets. In the absence of the mass migrations, wages and labor productivity would have been a lot higher in the New World and a lot lower in the Old; and in the absence of the mass migrations, income per capita would normally have been somewhat higher in the New World and somewhat lower in the Old World. The impact is biggest, of course, when domestic capital stocks are nowhere allowed to respond to the mass migrations. This is a silly assumption, but at least it establishes an upper bound. We will start there.

Not surprisingly, the biggest counterfactual impact is for those countries that experienced the biggest migrations: by 1910, Irish wages would have been lower by 36 percent, Italian by 33 percent, and Swedish by 12 percent; and Argentine wages would have been higher by 46 percent, Australian by 28 percent, Canadian by 31 percent, and American by 15 percent. Still ignoring global capital market responses, the analysis suggests that in the absence of the mass migrations, real wage dispersion would have *increased* by 42 percent between 1870 and 1910, when in fact it decreased by 28 percent. GDP per worker dispersion would have decreased by only 9 percent rather than by the 29 percent observed. GDP per capita dispersion would also have decreased by only 9 percent rather than by the 18 percent observed. Wage gaps between New World and Old actually declined from 96 to 79 percent between 1870 and 1910, but in the absence of the mass migrations, they would have *risen* to 150 percent!

Pairwise comparisons are also easily constructed. Wage gaps between many Old World countries and the United States fell dramatically as a result of mass migration: without Irish emigration (some of whom went to America) and U.S. immigration (some of whom were Irish), the American-Irish wage gap would have risen by 101 percentage points, whereas in fact it fell by 48; without Italian emigration (a large share of whom went to America) and U.S. immigration (many of whom were Italian), the American-Italian wage gap would have risen by 149 percentage points,

³⁷ Taylor and Williamson, "Mass Migration"; labor demand equations were estimated by using panel fixed-effect techniques on a 14-country sample over the four decades 1870–1910 (appendix 2). The results were very close to modern estimates (Hammermesh, *Labor Demand*).

whereas in fact it fell by 102; without British emigration and Australian immigration, the Australian-British wage gap would have fallen only by 4 percentage points, whereas in fact it fell by 55; and without Italian emigration and Argentine immigration, the Argentine-Italian wage gap would have risen by 187 percentage points, whereas in fact it fell by 45. Furthermore, the mass migrations to the New World had an impact on economic convergence within the Old World: without the Norwegian emigration flood and the German emigration trickle, the German-Norwegian wage gap would have fallen by 67 percentage points, whereas in fact it fell by 83; and without the fact that Irish emigration exceeded British emigration by far, the British-Irish wage gap would have risen by 25 percentage points, whereas in fact it fell by 26.

These counterfactuals suggest that *all* of the real wage convergence between 1870 and 1910, almost three-quarters of the GDP per worker convergence, and perhaps one-half of the GDP per capita convergence was due to mass migration. The relative insensitivity of GDP per capita convergence to migration can be explained easily enough. High migrant labor participation rates amplify the impact of population migration on real wages or GDP per worker, but the impact on GDP per capita is muted. Why? Migration has a big impact on the labor force, GDP per worker, and wages, because the labor content of the migrations is big. Migration has a smaller impact on GDP per capita for much the same reasons: emigration may raise GDP per worker by offsetting diminishing returns in production—a positive impact on GDP per capita, but selectivity assures that emigration will take away a disproportionate share of the labor force—a negative impact on GDP per capita. The latter effect was strong in the late nineteenth-century Atlantic economy, so muted effects of mass migration on GDP per capita convergence are no surprise.

Now let's purge that silly assumption about no world capital market responses, and assume instead that there would have been a foreign capital flow response in the no-migration counterfactual. That is, migration augments the labor force in the rich country relative to the poor, lowering capital-labor ratios in the rich country relative to the poor, raising capital's productivity in the rich country relative to the poor, and thus encouraging the flow of capital from poor country to rich. In short, capital chases after labor. Indeed, what happens in the no-migration counterfactual when the labor supply shocks generate a large enough capital inflow or outflow to maintain a constant rate of return on capital in each country? It turns out that theoretical capital-chasing-labor offsets are in fact very large.³⁸ But

³⁸ The big late nineteenth-century capital flows went from Old World to New World rather than from center to periphery within the Old World. That is, they chased after labor migrating to (rich) surplus natural resource areas. Thus, the majority of late 19th-century international capital flows did not contribute to convergence. This is consistent with Barro, Mankiw, and Sala-i-Martin, "Capital Mobility," who find the quantitative impact of global capital flows on late twentieth-century convergence "small." However, the Nordic fringe offers a spectacular late nineteenth-century

the net result with capital chasing is that mass migration *still* accounts for 70 percent of the real wage convergence between 1870 and 1910, leaving approximately 30 percent to other forces, like the trade forces stressed by Heckscher and Ohlin.

Mass migration and trade explain an enormous share of the convergence observed in the late nineteenth century. It follows that migration and trade restrictions associated with war and policy must go a long way in explaining why convergence stopped after 1914. Although this lesson of history sounds plausible, nobody has yet constructed an explicit test. Furthermore, what happened to the other, more traditional, closed-economy explanations for late nineteenth-century convergence?

SCHOOLING AND NINETEENTH-CENTURY CONVERGENCE

When economists estimate what is known as the conditional convergence equation on late twentieth-century evidence, they almost always include schooling.³⁹ When they do, schooling matters, especially in predicting which countries are members of the convergence club and which are not. Does it follow that schooling also played a powerful role in the late nineteenth century? Maybe yes, maybe no. After all, technologies were much less skill intensive in the 1890s than they are today.⁴⁰

My view is that schooling was a minor player in late nineteenth-century convergence. I suspect it became a major player only in the late twentieth century. Economic historians do not seem to share my view. In 1979, Lars Sandberg published “The Case of the Impoverished Sophisticate,” which explored the relationship between schooling and Swedish economic growth before World War I. Sandberg did not offer an explicit test of his schooling hypothesis at that time, but no one has stated the proposition with greater clarity, including the new growth theorists or Richard Easterlin in his 1981 Presidential Address to this Association.⁴¹ Carlo Cipolla certainly offered plenty of evidence in support of the impoverished sophisticate view and, based on such evidence, argued that the “more literate countries were the first to import the Industrial Revolution.”⁴² By 1850, Sweden was the most literate country in Europe and was the only European country that could measure up to the United States in that dimension.⁴³ Indeed, in a later paper Sandberg used Cipolla’s qualitative literacy data to show that the 1850 educational ranking was highly

exception: a very large share of their dramatic catch-up on the leaders was accounted for by capital flows (O’Rourke and Williamson, “Open Economy Forces” and “Education”).

³⁹ For example, Mankiw, Romer, and Weil, “Contribution,” p. 426; or Barro, “Economic Growth.”

⁴⁰ Schooling may also play a more modest role simply because our convergence sample excludes very poor countries in Eastern Europe, much of the Mediterranean, Asia, and the rest of what now is called the Third World.

⁴¹ Easterlin, “Why Isn’t?”

⁴² Cipolla, *Literacy*, table 6, pp. 72, 87.

⁴³ Sandberg, “Case,” p. 230.

correlated with the 1970 per capita income ranking and that up to 1913, “the poor, high literacy countries . . . grew the fastest, . . . [whereas] the low literacy countries . . . [grew] slower.”⁴⁴ Gabriel Tortella has recently elaborated on this theme while searching for explanations of economic backwardness in the Mediterranean basin.⁴⁵

Although these studies certainly find correlations in the data, they do not assess the contribution of schooling to convergence.⁴⁶ O’Rourke and I recently filled this void by estimating standard convergence equations on late nineteenth-century data conditioned by schooling, where the latter was proxied first by enrollment rates (the standard proxy) and second by literacy rates.⁴⁷ The conditional convergence equations were estimated on both real wage data and GDP per worker data.⁴⁸ The underlying data base has been revised since, but panel A in Table 4 suggests that our earlier results are robust. The contribution of schooling to GDP per worker growth is never statistically significant, supporting the view that schooling was far less important to late nineteenth- than to late twentieth-century growth. However, the contribution of schooling to real wage growth is significant.⁴⁹ As predicted by Abramovitz, Easterlin, Sandberg, Tortella, and the new growth theorists, schooling levels “conditioned” real wage convergence in the late nineteenth century. Poor countries well endowed with schooling caught up faster than those poorly endowed, presumably because—in Abramovitz’s words—their “social capabilities” were better established. That is, they were better able to exploit open economy and globalization effects. Furthermore, when conditioned by schooling, the rate of real wage convergence (λ) rises from 1.2 to 1.7 or 1.8 percent per annum.

What we really want to know, however, is whether schooling played a central role in accounting for convergence. We can find out by asking another question: how much of each country’s “deviant” growth performance between 1870 and 1913 was due to each country’s “deviant” schooling performance? As the notes to panel B in Table 4 indicate,

⁴⁴ Sandberg, “Ignorance,” p. 689.

⁴⁵ Tortella, “Patterns.”

⁴⁶ As far as I am aware, only Leandro Prados and his collaborators (Prados, Sánchez, and Oliva, “De Te Fabula Narratur?”) have attempted to estimate pre-World War II convergence equations conditional on schooling. However, they do not estimate the impact of schooling by epoch, nor do they tell us whether the contribution of schooling to convergence has varied since the mid-nineteenth century.

⁴⁷ O’Rourke and Williamson, “Education” and “European Periphery.”

⁴⁸ The real wage data is from Williamson, “Evolution”; and the GDP data is from Maddison, *Dynamic Forces*.

⁴⁹ This result is surprising. After all, the real wage growth is for “raw” unskilled labor and only measures changing labor scarcity and labor productivity within one (un)skilled category. GDP per worker-hour growth aggregates the impact of changing labor productivity within skill categories and changing labor productivity due to country-wide shifts up the skill ladder. We have also experimented with the addition of *changes* in schooling, but the results were poor. Table 4 and the text stick, therefore, with levels of schooling on the right hand side, as does most of the empirical new growth literature.

TABLE 4
CONDITIONAL CONVERGENCE FOR THE LATE 19TH CENTURY:
ADDING SCHOOLING

A. Convergence Regressions					
Sample	Coefficients on:		R^2	N	λ
	log 1870 Value	log Schooling Variable			
1 Using Enrollment Rate Estimates					
1870–1913, real wage	–0.534*** (3.186)	0.349* (1.894)	0.45	16	0.018
1870–1913, GDP per worker	–0.263** (2.660)	0.095 (1.339)	0.37	15	0.007
2 Using Literacy Rate Estimates					
1870–1913, real wage	–0.512*** (3.541)	0.531** (2.676)	0.55	16	0.017
1870–1913, GDP per worker	–0.201** (2.159)	0.063 (0.357)	0.29	15	0.005

B. Convergence Impact (percentage accounted for)		
Country	Real Wage Growth Using:	
	Enrollment	Literacy
Argentina	all	all
Australia	none	none
Belgium	none	none
Canada	21	13
Denmark	27	40
France	none	none
Germany	none	none
Great Britain	87	none
Ireland	none	all
Italy	84	all
Netherlands	none	none
Norway	25	57
Portugal	61	75
Spain	11	59
Sweden	14	31
USA	65	27

* = Significant at the 10 percent level.

** = Significant at the 5 percent level.

*** = Significant at the 1 percent level.

Notes: t -statistics are in parentheses. The following regression equation underlies the results given in panel B

$$(y - \bar{y}) - \beta_1 \times (w - \bar{w}) = \beta_2 \times (e - \bar{e}) + \epsilon$$

where y = Ln 1913 wage – Ln 1870 wage

w = Ln 1870 wage

e = schooling variable (enrollment or literacy)

β_1 is the coefficient on Ln 1870 wage in the regression of wage growth on initial wage and enrollment literacy (panel A.1 or panel A.2). β_2 is the coefficient on the schooling variable in the same regression. The list of countries in each regression sample is given in panel B with the country-specific results. The left side of the equation represents the residual above or below average growth in wages net of the initial wage level, which is assumed to capture open economy effects. The right side is a calculation of the amount of wage growth due to above or below average levels of the education variable. By dividing the right side by the left side, we obtain the percentage of above or below average “residual” growth in wages attributable to above or below average levels of enrollment or literacy.

Sources: See the text.

“deviant” growth is defined as the residual left over after controlling for initial real wage levels (a proxy, at least in part, for the impact of globalization), whereas “deviant” schooling is simply how much it exceeded the average. Panel B answers the question. First, in 12 of 32 cases, schooling did not matter at all. These were almost always European industrial leaders who, presumably, had already fulfilled some minimum schooling precondition. Where schooling mattered consistently was around the European periphery: good schooling accounted for from 14 to 57 percent of “deviant” good growth in Scandinavia (Denmark, Norway, Sweden); bad schooling accounted for from 11 percent to all of “deviant” bad growth in the Mediterranean basin (Italy, Portugal, Spain). For the full sample, schooling accounted for about a third of “deviant” growth. It did *not* account for a third of growth above or below average. It did *not* account for a third of convergence. Rather, it accounted for a third of the residual growth after controlling for initial 1870 conditions. I have already argued that those initial conditions explain most of the convergence in the late nineteenth-century environment of globalization: poor countries sending out emigrants; rich countries absorbing immigrants; and trade between rich and poor countries inducing even more factor price convergence.

Schooling did matter to late nineteenth-century convergence. But it mattered only to real wage growth and not to GDP per worker-hour growth; it mattered mostly to “just” the European periphery; and it accounted for a far smaller share of total convergence than did globalization.

MINOR PLAYERS IN NINETEENTH-CENTURY CONVERGENCE: INDUCED FACTOR SAVING, TECHNOLOGICAL TRANSFER, AND OTHER IMPONDERABLES

What about technological convergence and the transfer of technologies? Alexander Gerschenkron thought the answer to convergence lay with the fact that backward countries had more to gain by eliminating the productivity gap between best modern practice in rich countries and primitive traditional practice in poor countries.⁵⁰ Thus, poor countries had the biggest growth potential. As Abramovitz pointed out, a country’s “social capability” will determine whether the poor country exploits that potential, where “social capability” can be proxied by schooling.⁵¹

There are at least four problems with this otherwise plausible explanation. First, industrial technologies were well known the world around in the late nineteenth century, and schooling was not as important on the plant floor as it is now. There were few industrial mysteries to transfer, and schooling was not central to the process. Second, as we have seen

⁵⁰ Gerschenkron, “Economic Backwardness.”

⁵¹ Abramovitz, “Catching Up.”

empirically at the macrolevel, schooling was not all that important to the convergence process, at least amongst members of our OECD club. Third, poor European countries had little to learn from rich New World countries, at least before the turn of the century. For example, Robert Allen has shown that American blast furnaces had no distinctive world-class stature worth copying prior to the 1890s.⁵² To take another example, can anyone cite one example of Australian technology transferred to Europe in the late nineteenth century? And reminiscent of Simon Kuznets and Edward Denison, Steve Broadberry has recently pointed out that it was industrialization that mattered most to catch-up in the late nineteenth century, not technological catch-up within industry.⁵³ Need I point out that rapid industrialization in poor, labor-abundant countries was strongly conditioned by globalization forces? This, after all, offered the critical vent-for-surplus industrial output in those poor countries whose home markets were too small to absorb the new industrial output by themselves.

Finally, for agriculture at least, there is a long tradition documenting technological *divergence*, not convergence. H. J. Habakkuk, Yujiro Hayami and Vernon Ruttan, and David used the induced innovation hypothesis to accommodate the facts that poor labor-abundant economies in the nineteenth century searched for and found labor-using and land-saving technologies and that rich labor-scarce economies searched for and found land-using and labor-saving technologies.⁵⁴ The effect was to diminish the importance of what were otherwise wide differences in the relative endowments of land and labor: it served to raise labor scarcity in the poor Old World and lower it in the rich New World.

But were these factor-saving forces important in accounting for convergence during the late nineteenth century? Apparently so: factor-saving productivity advance seems to have accounted for almost half of the trends in the ratio of farm rents to wages.⁵⁵ Whether these powerful forces were primarily limited to agriculture and farm rents or whether they influenced more generally economy-wide real wage and labor productivity convergence has yet to be determined. Perhaps most of the land saving was induced by the relative demise of agriculture in favor of industry: after all, industrialization tends to be land saving, raising instead the relative demands for labor and capital. If so, then we may simply be putting new labels on forces already identified. Important factor-saving forces are

⁵² Allen, "Peculiar Productivity History"; see also Wright, "Origins."

⁵³ Broadberry, "Convergence" and "Micro-Historical Foundations." The reference in the text is, of course, to Denison's *Why Growth Rates Differ* and Kuznets's *Modern Economic Growth*.

⁵⁴ Habakkuk, *American and British Technology*; Hayami and Ruttan, *Agricultural Development*; and David, *Technical Choice*.

⁵⁵ O'Rourke, Taylor, and Williamson, "Factor Price Convergence." Factor saving mattered to late nineteenth-century convergence, and it appears that this effect is not some quaint historical aberration, for it reappears in a somewhat different guise in the cross-sectional accounts of trade patterns in the 1980s (Trefler, "International Factor Price Differences").

consistent with Broadberry's focus on industrialization and thus with globalization, which, after all, was the "handmaiden" of industrialization.⁵⁶

IS CONVERGENCE A GOOD THING? WHO GAINS AND WHO LOSES?

Here are two bromides. Bromide Number One: Big factor price differentials across countries imply poor global resource allocation and big Harberger triangles. Erosion of those factor price differentials implies better global resource allocation and higher global income. Bromide Number Two: Catch-up achieved by faster growth among poorer countries has much more positive welfare implications than catch-up by slower growth among richer countries.

Although true, these two bromides are not very helpful in assessing whether convergence is a good thing. Convergence of what? The new growth theory has shown very little interest in who gains and who loses from convergence. The theory tends to be highly aggregative, and its empirical applications deal with coarse aggregates like gross domestic product per worker. What about wages of unskilled laborers, wages of skilled artisans, salaries of skilled clerical workers, farm rents accruing to landlords, and profits accruing to capitalists? What about returns to sector-specific resources and capital?

Understanding the sources of convergence is fundamental to understanding who gains and who loses from convergence and thus to understanding policy responses. Consider three examples.

First: If the source of the convergence was some mysterious acceleration in factor-neutral productivity advance in poor countries, then it is much more likely that everyone gained from convergence. But productivity advance was *not* factor neutral in the late nineteenth century. Rather, it saved on (unskilled) labor in rich countries, while it saved on land in poor countries. Productivity convergence of this sort should have tended to raise wage-rental ratios in Europe and—where land ownership was highly concentrated—to move income distributions in a more egalitarian direction. The opposite should have been true of the New World, even though land ownership was not as highly concentrated. In Europe, unskilled labor gained and landowners lost by those factor-saving convergence forces. In the New World, unskilled labor lost and landowners gained from the convergence forces. Yet, it is hard to imagine any late nineteenth-century political response or policy action that would have altered these productivity events much.

Second: Suppose the source of convergence lay with the elimination of some market failure in institutionally weak, rent-seeking, and price-distorted poor countries. Suppose, for example, it took the form of state intervention to exploit the gap between social and private rates of return

⁵⁶ I refer here to Irving Kravis's "Trade as a Handmaiden of Economic Growth."

to schooling, or intervention to release liquidity constraints on the household's schooling decision. What then? Rising "social capabilities" should have accelerated catch-up in the poor countries. In addition, the newly schooled escaping poverty in poor countries would have served to create more egalitarian income distributions. The poor who did not use schooling to escape poverty would at least have found themselves scarcer and able to command higher wages, thus implying even more egalitarian income distributions.⁵⁷ Although such policies may have fostered catch-up and convergence, they clearly improved living standards of the working class. Furthermore, they should have improved the incomes of rich capitalists to the extent that capital and skills were complements, as we now believe. It follows that capitalists should have supported such policies. Because land and skills were less likely to have been complements (except in such cases as Danish agriculture), landed interests were less likely to have supported such policies.

Third: Suppose the source of convergence lay instead with the two open economy and globalization forces that I have already stressed, namely, international labor migration (in excess of the capital migration that often chased after the labor) and factor price convergence induced by global commodity market integration and trade booms. Here the distributional impact is even clearer and probably more powerful. Unskilled labor migration raised the real wage of unskilled labor in poor emigrating countries and lowered it in rich immigrating countries. These forces were reinforced by trade. Recall that powerful forces of global commodity market integration were at work in the late nineteenth century: the resulting trade booms shifted unskilled labor demand to the right in poor countries (compared with other factors) and to the left in rich countries (compared with other factors). These trade-induced forces tended to have the same effect as the mass migrations: the relative price of unskilled labor tended to rise in poor countries and fall in rich countries. It follows that the skill premium, earnings inequality, and income inequality should, *ceteris paribus*, have been falling in the poor European countries that were catching up. The faster the catch-up, the bigger the fall. In contrast, the skill premium, earnings inequality, and income inequality should, *ceteris paribus*, have been rising in the rich New World countries. Because we believe the latter to have been true of the United States and the rest of the OECD since the 1970s, it should have been even *more* true of the late nineteenth century when legal migration was so much bigger.⁵⁸ The proposition needs to be strengthened with more evidence, but the prospects look good. After all, although British inequality started to decline following the late 1860s, the decline was delayed for about sixty years in the

⁵⁷ Williamson, *Inequality*.

⁵⁸ The literature is accumulating rapidly: Borjas, Freeman, and Katz, "On the Labor Market Impacts"; Lawrence and Slaughter, "International Trade"; Wood, *North-South Trade*; Burtless, "International Trade"; and Krugman and Venables, "Globalization."

United States, and immigration, at least, must have made a contribution to the delay.⁵⁹

DOES CONVERGENCE SEED ITS OWN DESTRUCTION?

Do proglobalization policies persist, thus accommodating convergence, or do antiglobalization policies emerge, thus choking it off?

Globalization and convergence had a predictable influence on income and wealth: some gained and some lost. One would have expected increasingly loud political complaints from the losers and emerging political alliances and stronger lobbying favoring policies to protect those losers. If the losers were able to persuade the rest that deglobalization was the only “fair” way to ease their economic damage, tariffs would have risen and migration restrictions would have been imposed. Can the timing and magnitude of immigration restrictions after the 1890s in the United States, more manipulative immigration policies in Canada, changing immigrant subsidies in Australia and Brazil, the alliance between iron and rye in Germany, and rising protection elsewhere on the Continent be explained, at least in part, by the forces of convergence that had been taking place since the mid-nineteenth century? Can the autarchic deglobalization from World War I to 1950 be explained, at least in part, by the same political economy dynamic?

As economic stress mounts in the 1990s, we need to understand far better the switch from globalization and convergence up to World War I to deglobalization and divergence up to 1950. Was the switch a product of the convergence itself? Can we expect the same over the next quarter century?

⁵⁹ Williamson and Lindert, *American Inequality*; Williamson, “Immigrant-Inequality Trade-offs”; Williamson, *Did British Capitalism?*; and Lindert and Williamson, “Growth.”

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